



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/567,817	02/08/2006	Jeremy Daniel McKendrick Watson	MOIB128	4459
71134 7590 06/25/2009 Edwards Vacuum, Inc. 2041 MISSION COLLEGE BOULEVARD SUITE 260 SANTA CLARA, CA 95054				
EXAMINER				
YOUNG, NATASHA E				
ART UNIT		PAPER NUMBER		
1797				
MAIL DATE		DELIVERY MODE		
06/25/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/567,817

**Applicant(s)**

WATSON ET AL.

**Examiner**

NATASHA YOUNG

**Art Unit**

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goodell et al (US 4,942,019) in view of della Porta et al (US 4,137,012) and Deninger et al (US 2002/0051712).

Regarding claim 1, Goodell et al discloses a purifier for use in a gas processing application, comprising a chamber (C) having a gas inlet and a gas outlet (see figure 2) at least one baffle (24) arranged in the chamber, a source of the getter material within the chamber (25); and means for activating the source of the getter material (16) (see Abstract; figures 2-3; and column 2, line 49 through column 3, line 47).

Goodell does not disclose at least one baffle having a coating comprising a getter material to react with species to be removed from a gas stream and form stable compounds; means for activating the source of the getter material to refresh the coating of getter material on the at least one baffles; and means for vaporizing the source of the getter material to refresh the coating of getter material on the at least one baffle.

della Porta et al discloses at least one baffle (strips, 46 and 48) having a coating comprising a getter material to react with species to be removed from a gas stream and form stable compounds and means for activating the source of the getter material to refresh the coating of getter material on the at least one baffles (see column 5, line 3 through column 6, line 8 and figures 4-6).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings on Goodell et al with the teachings of della Porta et al such that at least one baffle having a coating comprising a getter material to react with species to be removed from a gas stream and form stable compounds and

means for activating the source of the getter material to refresh the coating of getter material on the at least one baffles in order to apply an electric current to the high electrical resistance substrates, which passes current through the substrate that heats the gettering material incorporated therein to the desired temperature for initial activation and to its operation temperature (see column 2, line 60 through column 3, line 3).

Additionally, because these two elements, heater and sleeve and electrode and rod, were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute the electrode and rod for the heater and sleeve.

Deninger et al discloses the use of fresh and extremely pure metallic getter surface can be produced by evaporation or cathode sputtering in a vacuum or non-evaporative getter (NEG) may be used (see paragraph 0102) and a gas purification unit wherein the titanium getter material is re-activated by the evaporation of fresh titanium (see paragraph 0104).

Because these two elements types of getter material (evaporative and non-evaporative) were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute evaporative getter for non-evaporative getter.

Regarding claim 14, Goodell et al disclose a purifier wherein the getter material comprises at least one metal selected from the group of metals consisting of Ti, Ta, Zr and alloys thereof (see column 1, lines 35-44).

Additionally, della Porta et al discloses the getter material comprises at least one metal selected from the group of metals consisting of Ti, Ta, Zr and alloys thereof (see column 2, lines 48-59).

Regarding claim 15, Goodell et al discloses a purifier wherein the getter material comprises at least one metal selected from the group of metals consisting of Fe, Cr and alloys thereof (see column 1, lines 35-44).

Claims 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goodell et al (US 4,942,019), della Porta et al, '012 (US 4,137,012), and Deninger et al (US 2002/0051712 A1) as applied to claim 1 above, and further in view of della Porta et al, '645 (US 3,620,645).

Regarding claim 6, Goodell et al does not disclose a purifier wherein the source of the getter material comprises a rod, the at least one baffles being arranged about the rod.

della Porta et al, '012 discloses rod means (52) is orthogonally positioned with respect to the width of the pleated strips for maintaining the separation between adjacent parallel zones (50) (see column 5, lines 3-27 and figure 5).

della Porta et al, '012 does not disclose the source of the getter material comprises a rod (see column 5, lines 3-27).

della Porta et al, '645 discloses the getter device can be an integral part of the electrodes of an electronic-discharge device, or of an electrode carrier (see column 4, lines 39-46).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of della Porta, '012 with the teachings of della Porta et al, '645 such that the rod is coated with getter material in order to improve the activation of the getter material and the approach to the operating temperature.

Regarding claim 7, Goodell et al does not disclose a purifier wherein the rod extends longitudinally through the chamber.

della Porta et al, '012 discloses the rod (52) extends longitudinally through the chamber (see figure 5).

Regarding claim 8, Goodell et al does not disclose a purifier wherein the rod is substantially co-axial with the chamber.

However, Goodell et discloses a sleeve (14) which receives a heater (16) and the sleeve to substantially co-axial with the chamber (see column 2, lines 49-59 and figures 2-3).

della Porta et al, '012 does not disclose the source of the getter material comprises a rod (see column 5, lines 3-27).

Therefore, because these two elements, heater and sleeve and electrode and rod, were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute the electrode and rod for the heater and sleeve.

Regarding claim 9, Goodell et al discloses a purifier wherein the means for activating the source of the getter material comprises a controller (see column 2, lines 49-68 and figure 2-3).

Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goodell et al (US 4,942,019), della Porta et al, '012 (US 4,137,012), Deninger et al (US 2002/0051712 A1), and della Porta et al (US 4,137,012) as applied to claim 1 above, and further in view of Bobo (US 3,399,052).

Regarding claim 3, Goodell et al a purifier further comprising a collector (see figure 2) where the getter material (25) is housed or collected within the chamber (C) (see figures 2-3).

Goodell et al does not disclose a purifier further comprising a collector wherein the means for activating the source of the getter material is arranged to produce an electric arc between the source of the getter material and the collector.

Bobo discloses an electric arc used to heat and vaporizes solid barium and the so-vaporized barium is then cooled and collected in a suitable receptacle (see column 1, lines 34-48).

Therefore, because these two elements were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute an electric arc for a heater.

Regarding claim 4, Goodell et al discloses a purifier wherein the collector extends about the source of the getter material (see figure 3), since the getter material (25) is housed or collected within the chamber (C).

Regarding claim 5, Goodell et al a purifier further comprising an inner wall of the chamber wherein the collector comprises at least part of the inner wall of the chamber



(see figure 3), since the getter material (25) is housed or collected within the chamber (C).

Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goodell et al (US 4,942,019), della Porta et al, '012 (US 4,137,012), Deninger et al (US 2002/0051712 A1), and della Porta et al, '645 (US 3,620,645) as applied to claim 9 above, and further in view of Griessel (US 3,167,678).

Regarding claim 10, Goodell et al does not disclose a purifier wherein the controller is adapted to activate at predefined time intervals.

Griessel discloses the heater can comprise a plurality of independently controllable sections with one heat section essentially determining the temperature of the inner cylinder and the other heater section essentially determining the temperature of the extending section of the outer cylinder (see column 1, lines 26-34 and line 45 through column 2, line 3) such that the controller is adapted to activate at predefined time intervals.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Goodell et al with the teachings of Griessel such that the controller is adapted to activate at predefined time intervals for improved control of the temperature.

Regarding claim 11, Goodell et al discloses a purifier further comprising a sensor for monitoring a process gas wherein the source of the getter material is activated when a predefined change in the process gas is detected by the sensor (see column 2, lines

60-68), since the thermocouple monitoring the temperature in the unit which includes the temperature of the gas being purified.

Regarding claim 12, Goodell et al discloses a purifier wherein the sensor (23) is located within the chamber (see figures 2-3).

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goodell et al (US 4,942,019), della Porta et al, '012 (US 4,137,012), and Deninger et al (US 2002/0051712 A1) as applied to claim 9 above, and further in view of Ellison (US 3,593,495).

Regarding claim 13, Goodell et al does not disclose a purifier wherein the at least one baffle is adapted to create a convoluted path for gas flowing through the chamber.

Ellison discloses a purifier wherein the at least one baffle is adapted to create a convoluted path for gas flowing through the chamber (see Abstract; figure 2, and column 3, line 45 through column 4, line 5).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Goodell et al with the teachings of Ellison such that the at least one baffle is adapted to create a convoluted path for gas flowing through the chamber to create a gas swirling effect to cause the gas to spiral flow about the tube with efficient heat removing contact against the hot tube and the inner wall of the container (see Ellison column 3, lines 52-73).

Claims 16, 20, 21, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krueger et al (US 5,911,560) in view of Goodell et al (US 4,942,019), della Porta et al (US 4,137,012), and Deninger et al (US 2002/0051712 A1).

Regarding claim 16, Krueger et al discloses a semiconductor process system (100) with getter assembly (202) with getter pumps (114, 116) with baffles (204) and a support element (210), which can further include a resistive element (212) (see figures 1-2; column 4, line 66 through column 5, line 18; and column 6, lines 15-43).

Krueger et al does not discloses a process chamber having a purified gas inlet; a purifier comprising a housing; a gas inlet; a gas outlet upstream of the purified gas inlet; at least one baffle within the housing and comprising a getter material; a source of the getter material; and a means for applying an electric potential across the source of the getter material and the housing, thereby vaporizing the source of the getter material to refresh the coating of the getter material on the at least one baffle.

Goodell et al discloses a purifier for use in a gas processing application, comprising a chamber (C) having a gas inlet and a gas outlet (see figure 2) at least one baffle (24) arranged in the chamber, a source of the getter material within the chamber (25); and means for activating the source of the getter material (16) (see Abstract; figures 2-3; and column 2, line 49 through column 3, line 47).

Goodell does not disclose a means for applying an electric potential across the source of the getter material and the housing.

della Porta et al discloses at least one baffle (strips, 46 and 48) having a coating comprising a getter material to react with species to be removed from a gas stream and form stable compounds and means for activating the source of the getter material to refresh the coating of getter material on the at least one baffles (see column 5, line 3 through column 6, line 8 and figures 4-6) and a means for applying an electric potential

across the source of the getter material and the housing (see column 4, lines 50-59), which discloses that an electrical potential is produced within the vacuum vessel.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings on Krueger et al with the teachings of Goodell et al and della Porta et al such that a process chamber having a purified gas inlet; a purifier comprising a housing; a gas inlet; a gas outlet upstream of the purified gas inlet; at least one baffle within the housing and comprising a getter material; a source of the getter material; and a means for applying an electric potential across the source of the getter material and the housing in order to apply an electric current to the high electrical resistance substrates, which passes current through the substrate that heats the gettering material incorporated therein to the desired temperature for initial activation and to its operation temperature (see column 2, line 60 through column 3, line 3) and to provide the getter pumps with purified gas.

Deninger et al discloses the use of fresh and extremely pure metallic getter surface can be produced by evaporation or cathode sputtering in a vacuum or non-evaporative getter (NEG) may be used (see paragraph 0102) and a gas purification unit wherein the titanium getter material is re-activated by the evaporation of fresh titanium (see paragraph 0104).

Because these two elements types of getter material (evaporative and non-evaporative) were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute evaporative getter for non-evaporative getter.

Regarding claim 20, Krueger et al does not disclose a semiconductor processing system wherein the at least one baffle is arranged about the source of the getter material.

della Porta et al discloses the at least one baffle is arranged about the source of the getter material (see column 5, lines 3-27 and figure 5).

Regarding claim 21, Krueger et al discloses a semiconductor processing system wherein the chamber (102) may include various power sources (see column 4, line 66 through column 5, line 18) such that it would have been an ordinary variation to have the means for applying an electric potential comprises a power supply to have the power to activate the getter material.

Additionally, della Porta et al discloses the electrical connections between the various pump modules can be in parallel or series according to the conditions of the electrical potential which can be tolerated within the vacuum vessel and two bus bars (66, 68) are connected in an alternating current power supply or a direct current power supply so that the current flows through the module strips (46, 48) of each module (44) (see column 5, line 50 through column 6, line 8).

Regarding claim 23, Krueger et al disclose a semiconductor processing system wherein the getter material comprises at least one metal selected from the group of metals consisting of Ti, Ta, Zr, Fe, Cr and alloys thereof (see column 7, lines 45-56).

Claims 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krueger et al, Goodell et al (US 4,942,019), della Porta et al, '012 (US 4,137,012), and

Deninger et al (US 2002/0051712 A1) as applied to claim 16 above, and further in view of della Porta et al, '645 (US 3,620,645).

Regarding claim 17, Krueger does not disclose a semiconductor processing system wherein the source of the getter material is a rod.

della Porta et al, '012 discloses rod means (52) is orthogonally positioned with respect to the width of the pleated strips for maintaining the separation between adjacent parallel zones (50) (see column 5, lines 3-27 and figure 5).

della Porta et al, '012 does not disclose the source of the getter material comprises a rod (see column 5, lines 3-27).

della Porta et al, '645 discloses the getter device can be an integral part of the electrodes of an electronic-discharge device, or of an electrode carrier (see column 4, lines 39-46).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of della Porta, '012 with the teachings of della Porta et al, '645 such that the rod is coated with getter material in order to improve the activation of the getter material and the approach to the operating temperature.

Regarding claim 18, Krueger et al does not disclose a semiconductor processing system wherein the source of the getter material is an electrode.

della Porta et al, '012 discloses rod means (52) is orthogonally positioned with respect to the width of the pleated strips for maintaining the separation between adjacent parallel zones (50) (see column 5, lines 3-27 and figure 5).

della Porta et al, '645 discloses the getter device can be an integral part of the electrodes of an electronic-discharge device, or of an electrode carrier (see column 4, lines 39-46).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of della Porta, '012 with the teachings of della Porta et al, '645 such that the source of the getter material is an electrode in order to improve the activation of the getter material and the approach to the operating temperature.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Krueger et al, Goodell et al (US 4,942,019), della Porta et al (US 4,137,012), and Deninger et al (US 2002/0051712 A1) as applied to claim 16 above, and further in view of Ellison (US 3,593,495).

Regarding claim 19, Krueger et al does not disclose a semiconductor processing system wherein the at least one baffle is arranged to form a convoluted flow path.

Ellison discloses a purifier wherein the at least one baffle is adapted to create a convoluted path for gas flowing through the chamber (see Abstract; figure 2, and column 3, line 45 through column 4, line 5).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Krueger et al, Goodell et al, and della Porta et al with the teachings of Ellison such that the at least one baffle is adapted to create a convoluted path for gas flowing through the chamber to create a gas swirling effect to cause the gas to spiral flow about the tube with efficient heat removing contact

against the hot tube and the inner wall of the container (see Ellison column 3, lines 52-73).

Claim 22 rejected under 35 U.S.C. 103(a) as being unpatentable over Krueger et al, Goodell et al (US 4,942,019), della Porta et al (US 4,137,012), and Deninger et al (US 2002/0051712 A1) as applied to claim 16 above, and further in view of Griessel (US 3,167,678).

Regarding claim 22, Krueger discloses a semiconductor processing system wherein the chamber (102) may include controllers (see column 4, line 66 through column 5, line 18) such that it would have been an ordinary variation to have the means for applying an electric potential comprises a controller for activating the source of the getter material at predefined time intervals to control the rate of adsorption of the getter material.

Griessel discloses the heater can comprise a plurality of independently controllable sections with one heat section essentially determining the temperature of the inner cylinder and the other heater section essentially determining the temperature of the extending section of the outer cylinder (see column 1, lines 26-34 and line 45 through column 2, line 3) such that the controller is adapted to activate at predefined time intervals.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Krueger et al with the teachings of Griessel such that the means for activating the source of the getter material comprises a controller in order to improve control of the heat used to activate the source.



### ***Response to Arguments***

Applicant's arguments, see Remarks, filed May 13, 2009, with respect to the rejection(s) of claim(s) 2 under U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Deninger et al (US 2002/0051712 A1).

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See Corazza et al (US 6,514,430 B1; 6,506,319 B1; US 6,013,195), Danielson et al (US 5,161,955), and Danielson (US 5,154,582).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATASHA YOUNG whose telephone number is 571-270-3163. The examiner can normally be reached on Mon-Thurs 7:30 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/N. Y./  
Examiner, Art Unit 1797

/Walter D. Griffin/  
Supervisory Patent Examiner, Art Unit 1797